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Copy 9 of 11
1 October 1963

MEMORANDUM FOR THE RECORD

SUBJECT : Trip Report - Meeting on Personal and Life Support Equipment

On September 26, 1963, a meeting was held [redacted] to review the status of personal and life support equipment for project OXCART. 25X1

Attendees included:

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Headquarters: Col. Ledford
Mr. Parangosky
[redacted] - chairman

25X1 [redacted]

Contractors Mr. Johnson - LAC
[redacted] LAC
- Firewel Co.
- David Clark Co.

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Civil Servants Mr. Shepardson - Wright-Patterson AFB
Mr. Redding - Wright-Patterson AFB

Problems, discussion, and action to be taken are as follows:

Problem: Oxygen consumption vs. ships supply.

Discussion and action: It was agreed that 25 liters per minute be accepted as a base line from which to compute duration vs. supply. Cockpit pressurization at 26,000 ft. will remain the same. A failure of one system at mission mid-point is possible and sufficient oxygen must be available for safe return on the remaining system.

By the end of November of this year the larger oxygen bottles, 1100 cu. in. vs. the present 875 cu. in., will be installed. These bottles will be charged to 2800 PSI vs. the present 2000 PSI.

NRO review(s) completed.

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When the larger bottles, charged to the higher pressure, are installed a mission of eight hours and fifteen minutes is possible with failure of one system at mission mid-point. This assumes a consumption rate of 25 liters per minute.

The possibility of charging the bottles to 3000 PSI will be pursued by Firewel Co.

Problem: Readability of ships oxygen pressure gauge.

Action: A top priority item for Firewel Co. to provide a gauge that can be read quickly and accurately. LAC may have to relocate the gauge to eliminate paralax error.

Problem: Oxygen Equalizer Valve

Discussion: This device is required to insure that both ships oxygen systems bleed down together. To date, Firewel Co. has not been able to produce an acceptable valve.

Action: Firewel will continue working on the problem and LAC will try their own approach.

✓ Problem: Visor Reflectance with full pressure suit helmet.

25X1 Action: D. Clark recently received a new laminated visor which will be evaluated ASAP. [redacted] will pursue his idea of a louvered piece of metal which will block out the sun and still permit necessary vision.

✓ Problem: Neck Seal vs. Face Seal in full pressure suit helmet.

Discussion: Two LAC pilots and two of our pilots have suits with the neck seal. Flights will continue with these garments to gather additional information regarding oxygen consumption and comfort.

25X1 ✓ Problem: In-flight Feeding

Action: [redacted] will contact Hamilton-Standard to investigate the device being used in project APOLLO. D. Clark Co. has a device in process.

✓ Problem: Urinal for full-pressure suit.

25X1 Action: [redacted] will work with Mr. Shepardson at Wright-Patterson for a solution.

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Problem: Ejection Seat D Ring

Discussion: A new D ring configuration was mocked up and checked with subject pressurized. The subject was able to reach the D ring under pressure, however, the back up system D ring was barely reachable.

Action: LAC will improve back up system D ring.

Problem: Metal palm bar in pressure suit glove.

Discussion: Two pilots would like to have the bar removed or modified. The bar should not be removed because of the resultant bulging in case of cockpit depressurization.

Action: D. Clark Co. will modify the bar for the two pilots desiring it.

Problem: Inadvertent actuation of flotation gear.

Action: A flap will be provided by area technicians as an interim fix. D. Clark will work on modification of the actuation device.

Problem: Location of visor heat control.

Action: Although this control has been moved forward four inches, the subject could not reach it when the suit was pressurized. LAC will attempt to make the control more accessible.

Problem: Vent flow back pressure in full pressure suit.

Action: Firewel will investigate change of flow at different detent positions on the flow controller. They will also investigate the bigger problem of why so much volume is required for adequate cooling. This problem has not been encountered in chamber runs.

Problem: Manual press to test.

Action: Item has met with pilot approval however, a more coarse control is desired - Firewel will provide.

Problem: Retention of oxygen hoses after ejection.

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Action: [redacted] will locate for each pilot an exit port for these hoses in their regular flying suit and full pressure suit outer garment.

Problem: Vent hose disconnecting.

Action: Firewel procuring hoses that are two inches longer.

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Problem: Helmet visor heat electrical connections.

Action: D. Clark improving connections.

Problem: Sticking of helmet visor at time of release.

Action: If the visor knob is not held down until the visor is pushed all the way up the seal will inflate and cause sticking. Pilots will be reminded of this. If problem exists when using proper procedure Headquarters should be notified.

Problem: Pressure suit glove seams.

Action: D. Clark Co. to relocate seams to provide better tactual discrimination.

Problem: Leg stretch

Action: LAC will provide new rudder configuration that will allow full leg stretch when desired.

Problem: Floating position of pilot in full pressure suit.

Discussion and Action: In a pool demonstration the subject was able to float in face down position. However, the parachute harness did not include the emergency oxygen pan or the automatic timer pan. Firewel to provide harness with these features plus a survival kit for future tests. Previous jump tests indicated proper floating position.

Problem: One man life raft.

Action: A new raft procured by Gen. Flickinger from NASA was demonstrated which proved to be more stable than the standard Air Force raft. More tests will be run at the area.

Problem: Pressure Suit Helmet Weight.

Action: D. Clark Co. is making every effort to reduce this weight. An example is the replacing of the outer sun shade with a more light-weight internal shade. New ear cups are also being provided.

Problem: Tie down cable

Action: New locking bars being provided by D. Clark.

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Problem: Lap belt failure.

Discussion: A lap belt failure in an ejection seat test at El Centro prevented dummy and seat separation. LAC investigated the problem and found that the force required to shear the pin varied from 450 PSI to 850 PSI. This was caused by pin heat treat which ranged from 55,000 PSI UTS to 110,000 PSI UTS.

Action: LAC is replacing the presently installed shear pin with one which has a controlled heat treat of 55,000 PSI UTS to 66,000 PSI UTS maximum.

Problem: Oxygen pressure warning light.

Discussion: Pilots desire an oxygen pressure warning light to indicate low breathing pressure or possibly both low and high oxygen pressure.

Action: LAC will investigate.

Problem: Release of emergency oxygen hose connection at suit controller.

Action: Firewel recently modified this connection which is being evaluated by the pilots.

A letter will be initiated by D/TECH/OSA to each of the contractors reconfirming their responsibilities as a result of this meeting.

SIGNED

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(Special Activities)

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10 - ASD/OSA (chrono)
11 - RB/OSA

ALSO WENT OUT AS OXC - GEN. FLICKINGER & MR. FLOYD REDDING (W-P AFB)